STEP 2: RELEVANT ISSUES AND KEY QUESTIONS

This section is intended to identify and prioritize the resource issues that are most relevant for making management decisions, identification of indicators most useful for assessing conditions of the core topics listed above, and formulation of key questions or concerns that will aid in determining watershed conditions. The resource issues that are most relevant to the assessing and managing watersheds are those that have the greatest potential to affect watershed health within the District.

Relevant Issues

The primary issues were identified using the information in existing plans, recommendations developed from discussions with Forest Service staff, and the experience of the resource specialists. These issues related to watershed management on the District are as follows:

- Accelerated erosion processes and increased sediment delivery
- Vegetation condition
- Wildlife habitat quality and condition
- Protection of cultural resources

The most critical issues affecting watershed condition in the District are associated with surface disturbance and its effect on erosion, sedimentation in downstream waterways, and vegetation condition. Surface disturbance contributes to increased erosion and transport of dissolved solids into surface water. Erosion caused by surface water runoff contributes sedimentation to streams, resulting in the perpetuation of the impaired uses identified by the state (NMED 2000) in the San Juan River. Surface disturbance can also facilitate the growth of invasive plants that compete with native vegetation and may affect wildlife habitat. The density of surface disturbance across the landscape also directly affects the quality and quantity of wildlife habitat and can have significant impacts on cultural resources.

In the District, gas development activities are the major cause of surface disturbance. They affect watershed vulnerability through the following mechanisms.

- Vegetation removal for well pads, roads, pipeline rights-of-way (ROW) results in increased soil exposure, decreased soil cohesion, increased volume of runoff, and increased sediment delivery from bare soil. Areas that are stabilized with vegetation after being disturbed are composed of a different mixture of vegetation and structural stage than was originally established, resulting in a long-term change in vegetation type to “reclamation grassland,” not one of the naturally occurring vegetation types within the District.
- Use of heavy machinery for the construction and operational phases of gas exploration and development result in increased soil compaction, increased volumes of surface water runoff, decreased infiltration of precipitation and groundwater recharge, and possible damage to structures of cultural importance.
- Roads fragment contiguous wildlife habitat and enables vehicle traffic that disrupts the security of the habitat and often spreads invasive plants to new areas. Unpaved roads redirect surface water flows across the landscape, concentrating surface water on unvegetated areas, often directing sediment-laden runoff into streams at road-stream crossings or from roads adjacent to waterways. Roads, therefore, result in increased volumes of surface water runoff and sediment delivery.
- Increased industrial runoff results in possible chemical transport and deposition.

Indicators that will be used to evaluate the status of the primary issues in each watershed include:

- Amount and distribution of surface disturbance
- Soil erosion rates on the landscape
- Sediment delivery from roads
- Road density
- Amount and condition of native vegetation
- Wildlife habitat fragmentation and disruption from human activities
- Stability or condition of cultural resources

New gas development has been projected to almost double the number of active well pads and increase the road miles by over 40 percent over the next 20 years. Because gas development is the primary source of surface disturbing activities, and due to the importance of the effects of surface disturbance on watershed condition, this analysis was determined to be necessary to provide a basis for guiding management decisions to protect surface resources within the District. Key questions to be addressed in the following sections of this analysis focus on characterizing, quantitatively or qualitatively, the current conditions and trends related to erosion and sediment delivery, vegetation condition, wildlife habitat, and the protection of cultural resources.